

Development of Methodology to Generate Reservoir Operating Rules as a Function of Climate Change and Future Water Requirements

Reservoir rule curves guide reservoir operation during the irrigation season. These operating rules can potentially be significantly improved using MTO (multiple timestep optimization) technology, which is the focus of this project. In addition to using historical hydrological conditions, the project will test a range of climate change scenarios with various realizations of runoff for the South Saskatchewan River basin.



RECIPIENT:

Evan Davies,
University of
Alberta



PARTNERS:

Government of
Alberta



TOTAL BUDGET:

\$245,000



AI FUNDING:

\$100,000



PROJECT DATES:

APR 2023 –

APR 2025

APPLICATION

The project will improve modelling practices for reservoir operating rules and related water demand hedging policies.



ALBERTA INNOVATES CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

WATER INNOVATION PROGRAM

PROJECT GOALS

The project will use MTO technology to investigate how river basin infrastructure can best manage future conditions by providing perfect trajectories of reservoir levels, also known as “rule curves”, for each simulated year.

BENEFITS TO ALBERTA

Improved water management decision-making supported by the MTO technology will increase water use efficiency in the province, generating benefits for agriculture and other downstream users.



2 Publications



1 Student Trained



1 New
Product/Service

CURRENT STATUS

MAY 2024

Milestone 1 is complete. Literature review on methods for creation of reservoir operating rules and work to develop a generic stochastic flow generator was completed. Development and comparison of various algorithms to convert long term MTO solutions into applicable reservoir operating rules is currently underway. The Oldman River Basin WEB.BM model is currently under development.